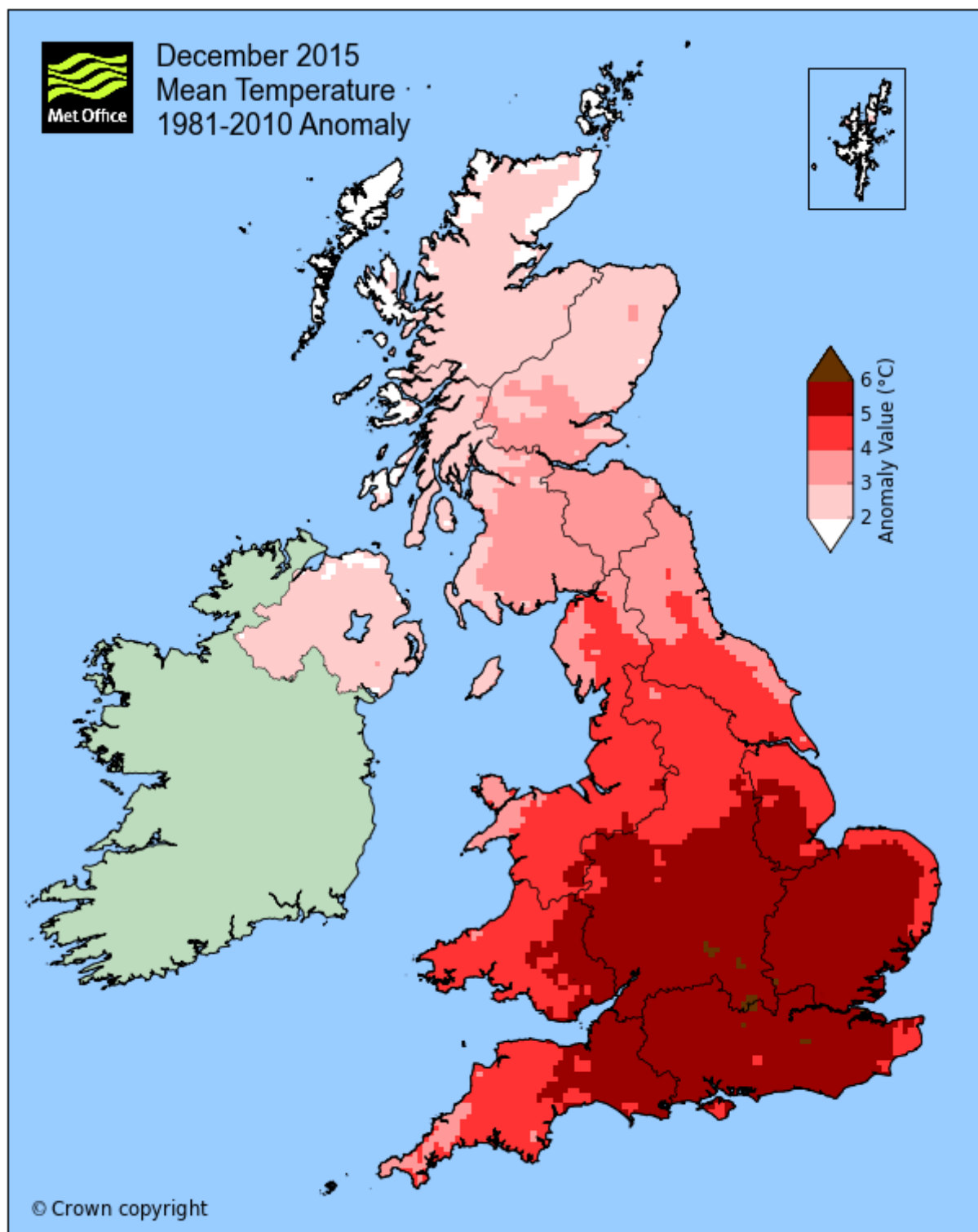


December 2015

The averaging period used for the following assessment was 1981-2010.

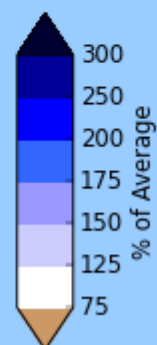
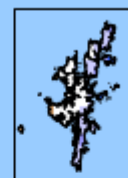
UK overview

The maps below show temperature and rainfall anomalies for December 2015 across the UK.





December 2015 Rainfall Amount % of 1981-2010 Average



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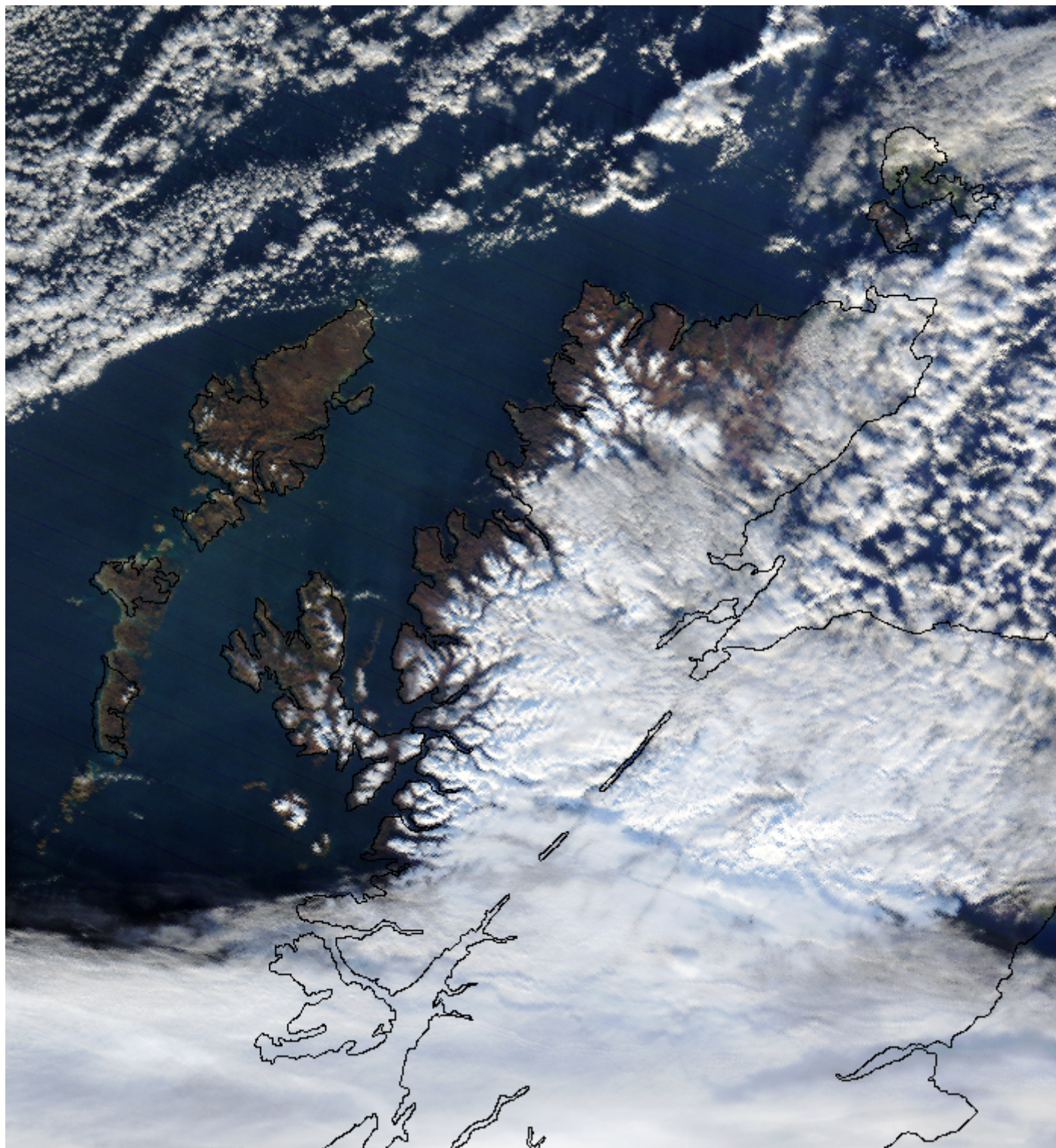
December was an exceptional and record-breaking month. The UK was in a warm and moist tropical air mass for most of the month, bringing unseasonably mild conditions to England and Wales, although Scotland and Northern Ireland were colder at times, particularly in the second week. It was also exceptionally wet and often windy, with frequent deep depressions and frontal systems - including storms Desmond, Eva and Frank - bringing record-breaking rainfall over much of Scotland, Wales and northern England. Severe flooding affected Cumbria for much of December, and became widespread across North Wales, northern England and Scotland after Christmas.

The UK mean temperature was 7.9 °C, which is 4.1 °C above the 1981-2010 long-term average, making it the warmest December in a series from 1910. This was 1.0 °C warmer than the previous warmest December. It was also easily the warmest December in the Central England temperature (CET) series from 1659. Mean temperatures were 5 to 6 °C above average in southern England, and remarkably, most parts of Wales and central southern England recorded no air frosts; temperatures were often comparable with those that might be

expected in October, April, or even May. With 182% of average rainfall, it was the wettest December, and calendar month, in the UK series. Rainfall reached 2 to 4 times the average in the west and north, and the severe flooding was exacerbated by saturated ground conditions following very wet weather in November in these areas. Fortunately rainfall totals were close to average over much of central and southern England. There were only 72% of average hours of bright sunshine, and it was the dullest December since 1989.

The UK monthly extremes were as follows: A maximum temperature of 17.2 °C was recorded at Teignmouth (Devon), Achnagart and Plockton (both Highland), all on the 16th. A minimum temperature of -8.7 °C was recorded at Dalwhinnie (Inverness-shire) on the 13th. In the 24 hours ending at 0900 GMT on the 6th, 264.4 mm of rain fell at Thirlmere (Cumbria). 341.4mm fell at Honister Pass (Cumbria) in 24 hours to 1800 GMT on the 5th, a new UK record for *any* 24-hours. A wind gust of 98 mph was recorded at Needles (Wight) on the 31st. A snow depth of 16 cm was measured at Aviemore (Inverness-shire) on the 14th.

This satellite image on 14 December shows a rare moment of cloud-free skies across north-west Scotland. Lying snow can be seen across the mountains of the north-west Highlands and the high ground of the Isles of Skye, Rum, Harris and South Uist. A snow depth of 16cm was recorded at 0900 GMT on 14th at Aviemore and Altnaharra (Sutherland) recorded a minimum temperature of -7.5°C . Image copyright Met Office / NASA.



Weather impacts

After the first named storms in November (Abigail, Barney and Clodagh), December kept up the very wet and windy theme. On 4 to 5 December, Storm Desmond brought record-breaking rainfall totals over the Lake District and other parts of northern England. Storm Eva then brought further strong winds and heavy rain on Christmas Eve, followed by a further depression on 25th to 26th which brought heavy rain across north Wales and northern England. Storm Frank brought further heavy rain on 30th across northern England, Northern Ireland and much of Scotland. This record-breaking rainfall fell on already saturated ground - these areas having received twice the normal rainfall in November - and inevitably there was extensive and major flooding - once again of national significance - to many parts of Cumbria, Lancashire, Yorkshire, Northumberland, North Wales and southern Scotland. The Met Office issued a red warning for rain across Cumbria and the Scottish Borders associated with storm Desmond on 5 December, and another red warning on 26 December for parts of Lancashire, West and North Yorkshire.

On 4 to 5 December, strong winds associated with Storm Desmond led to overturned lorries and temporary closures on the M6 and A66 in Cumbria, and the A1(M) in North Yorkshire. There were localised reports of fallen trees and power cables across northern England, leading to power cuts. Record-breaking rainfall totals brought widespread flooding of road and rail links across Cumbria, along with flooding of communities, including Keswick, Kendal, Cockermouth and Carlisle, and several bridges were washed away. There was also flooding on many road and rail routes in central and southern Scotland, and hundreds of properties were evacuated in Hawick due to concerns over the River Teviot.

Storm Eva brought further disruption on 23 and 24 December, followed by heavy persistent rain for many areas on the 25th and 26th. Serious flooding impacts were reported across much of Lancashire and Yorkshire, with significant transport and property flooding. Residents of Ribchester and Whalley in Lancashire, and Nidderdale Lodge Park in Knaresborough, North Yorkshire, were evacuated, and widespread flooding was reported in Hebden Bridge and Mytholmroyd. The Environment Agency estimated that approximately 3,500 properties were flooded from the River Foss in York. There was also disruption in Greater Manchester, where more than 11,000 homes lost power in Rochdale, and several roads were closed due to standing water. There was also flooding in Leeds, with over 500 properties flooded, and wider impacts to infrastructure, including mainline railway services. Defences in Tadcaster were overtopped and flooded a number of properties.

On the 29th, 30th and 31st, Storm Frank brought yet more flooding. In Scotland, hundreds of homes were evacuated in the Borders towns of Dumfries, Hawick and Peebles due to flooding. The villages of Moffat and Carsphairn were cut off, with fire crews rescuing people from properties by boat. Emergency services responded to reports of a missing kayaker on the River Findhorn in Moray, while in South Ayrshire 12 passengers had to be airlifted from a bus stuck in flood water. More than 100 people were evacuated from their homes in Ballater in Aberdeenshire. Elsewhere, thousands of homes experienced power cuts and fallen trees caused problems on the roads in Northern Ireland, and hundreds of homes were without power in Yorkshire. The flooding in eastern Scotland continued into the new year.

In January, the Association of British Insurers (ABI) estimated the final bill for the flood damage caused by storms Desmond, Eva and Frank to homes, businesses and motor vehicles to be £1.3 billion.

England diary of highlights

December was a record-breaking month, dominated by unseasonably mild and moist tropical maritime air masses and a marked absence of frost, particularly in the south. Frequent deep depressions brought strong winds and heavy rain to the north at regular intervals, though the rain was often lighter in the south. The first week saw record rainfall totals over Cumbria, and frequent wet weather during the last week led to widespread flooding in the north.

The mean temperature for December was 5.0 °C above the long-term average, making it easily the warmest December in the series from 1910. Remarkably, most weather stations across central and southern England recorded no air frosts. It was the wettest December in the series in the north, but rainfall totals were much closer to average in the south, and England as a whole had 154% of average rainfall. Sunshine was 74% of average, and it was particularly dull in the west and south.

1st to 4th:

The 1st was overcast with some patchy light rain, this mainly in the north. Some areas, particularly in the east, had a bright start on the 2nd, but cloudy skies spread from the west with some outbreaks of rain for western areas, although the east remained mainly dry. The 3rd was overcast, with rain for northern and western areas, and it was very mild with south-westerly winds. It was overcast for most parts of the country on the 4th, but sunny in the south-east, where Manston (Kent) recorded 6.9 hours of sunshine. Patchy light rain affected the north-west, but this turned increasingly heavy and persistent over Cumbria late in the day.

5th to 10th:

Storm Desmond tracked north-east across the country on the 5th, bringing strong winds with gusts widely over 70 mph in the north. It was exceptionally wet in the north-west with 264 mm recorded at Thirlmere (Cumbria) on the 5th, causing widespread flooding in this area. The wind and rain eased on the 6th, with mainly light rain spreading south-eastwards through the country during the afternoon. The 7th was a mild and breezy day, with a maximum temperature of 15.5 °C at Chivenor (Devon), and there were some sunny intervals, although rain spread from the west late in the day. Early rain cleared the south-east on the 8th to leave a day of sunshine and scattered showers driven on by a fresh south-west wind. The 9th was dry and bright in the south, but cloudy in the north, and it was increasingly wet and windy in the north-west. A cold front spread rain south-eastwards during the day on the 10th, and the rain lingered in southern areas.

11th to 14th:

It was cooler on the 11th with north-westerly winds and a mix of sunshine and scattered showers, although many central and eastern areas remained dry. Low pressure spread rain north-eastwards on the 12th, leading to further flooding, and the rain turned to snow in the north-east. After a cold and icy start in the north on the 13th, with a minimum temperature of -5.0 °C at Shap (Cumbria), a band of light rain spread slowly from the south-west. It was a dry and cloudy start in the north on the 14th, while rain across southern areas spread slowly north-east.

15th to 20th:

Rain spread north-east during the afternoon of the 15th after another dry cloudy start, and it was mild with a brisk south-east wind. The 16th was mild and mainly dry apart from patchy rain over some northern areas, and it was exceptionally mild with 17.2 °C at Teignmouth (Devon). It was also very mild on the 17th but rain spread across the southern half of the country during the day. The 18th started dry but it was mild and breezy and rain spread into northern and western areas. The 19th had rain in the north and west with 52 mm at Shap (Cumbria), and it was breezy and very mild in the south with 17.1 °C at Gravesend (Kent). The 20th was a day of sunshine and scattered showers, the showers heaviest in the north-west, and it was less mild than of late.

21st to 31st:

There was a dry and breezy start to the 21st but rain spread from the west, with 65 mm at Shap (Cumbria). The 22nd was again unsettled, with rain spreading south-east accompanied by strong south-westerly winds. The 23rd was much drier and brighter, with just isolated showers in the south. Rain moved eastwards on the 24th, clearing by mid-afternoon leaving sunshine and scattered showers. A warm front brought rain and higher temperatures on the 25th, and rain stagnated in northern parts with over 70 mm locally, causing widespread flooding to some major towns and cities. The rain continued for most of the day on the 26th with over 40 mm

in parts of Cumbria. It was dry on the 27th apart from some patchy rain in central areas, sunny in the north but cloudy in the south. The 28th was mainly dry and mild, cloudy for most but brighter in the south-east, with a maximum of 15.6 °C at Bridgefoot (Cumbria). A dry bright day followed on the 29th but rain spread into western areas during the evening. Western and northern areas bore the brunt of Storm Frank on the 30th with a gust to 77 mph at Loftus (Cleveland). Dry and bright early on the 31st, but a band of rain spread eastwards.

Wales diary of highlights

December was an exceptionally mild and wet month, dominated by unseasonably mild and moist tropical maritime air masses. Frequent deep depressions brought strong winds and heavy rain, which led to widespread flooding in the north towards the end of the month. The warmth was particularly pronounced at night, and unusually, no sites reported any air frosts.

The mean temperature for December was 4.7 °C above the 1981-2010 long-term average, making it by some margin the warmest December in a series since 1910. It was also the wettest December in the series, with 202% of average rainfall. With just 55% of average sunshine, it was the duller December since 1988.

1st to 6th:

The 1st was mild with patchy rain, and it became very windy overnight with widespread gusts to gale force near exposed coasts. It was slightly cooler on the 2nd, and cloudy and wet with some persistent rain for all areas. It became milder with further widespread rain on the 3rd, rainfall totals mostly around 20 mm. The approach of Storm Desmond on the 4th brought storm-force gusts to northern areas, and persistent heavy rain late in the day. There was more heavy rain in the north-west and widespread storm-force gusts on the 5th, with a gust of 90 mph at Capel Curig (Gwynedd), accompanied by 117 mm of rain. It remained mild and windy but was brighter with showers on the 6th, these showers fading out before more persistent rain reached the west late in the day.

7th to 13th:

Following the clearance of early rain, the 7th was a mostly dry, bright and windy day but further rain moved into all areas by early evening. The 8th was cooler and windy with a mix of sunny intervals and showers, the showers locally heavy. It was cloudy, mild and rather windy on the 9th, with some isolated outbreaks of rain early in the day, and rain over northern parts after dark, but otherwise it was mostly dry. The 10th started wet and windy, but the rain cleared southwards and it became cooler with sunshine and showers, the showers turning wintry over higher ground. It was cool, bright and showery in the north on the 11th, the showers decaying later, but cloudy and milder in the south. Rain became heavy and persistent on the 12th with 80.8 mm recorded at Capel Curig. Rain spread northwards during the 13th and it turned milder.

14th to 21st:

It was cloudy and mild on the 14th, and it turned increasingly wet from the south, especially after midday. It stayed mild on the 15th, becoming increasingly wet from noon. The 16th was cloudy and mainly dry, windy, and very mild with a maximum temperature of 16.7 °C at St. Athan (South Glamorgan). A very mild, cloudy, wet and breezy day followed on the 17th with 15.3 °C recorded in Cardiff. Conditions remained similar on the 18th with sporadic outbreaks of rain, mainly in the north, clearing away before dusk and temperatures reaching 16 °C at Rhyl (Denbighshire). It was wet, windy and very mild on the 19th, with over 30 mm of rain widely and 79.6 mm at Capel Curig, and a maximum of 16.7 °C at Prestatyn (Denbighshire). Early rain cleared north on the 20th leaving sunshine and blustery, locally heavy, showers. It was increasingly mild on the 21st with rain clearing to leave sunshine and showers, and very windy with an 85 mph gust at Mumbles (Swansea).

22nd to 31st:

Strong winds continued on the 22nd with widespread rain in the afternoon. Sunshine and showers on the 23rd with near-gale-force winds trailing Storm Eva, but showers decayed by the afternoon. It was wet and windy early on the 24th, then brighter with scattered showers and turning colder. Mild, wet and windy conditions dominated on the 25th, 26th and 27th, very wet on the 25th and 26th but the rain eased by the 27th. The 28th was cloudy, mild and windy with some rain early and late, particularly in the west. Sunshine and showers early on the 29th but it became dull and wet everywhere. Storm Frank developed into the 30th, bringing a 70 mph gust at Mumbles, and 38 mm of rain was recorded at Libanus (Powys). Rain and showers spread eastwards on the 31st, clearing late in the day to leave dry, cooler weather.

Scotland diary of highlights

December began unseasonably mild, wet and windy. Unseasonably warm tropical maritime air masses dominated for most of the rest of the month, but there were some brief colder interludes, particularly in the second week. Frequent deep depressions continued to bring strong winds and heavy rain, which resulted in widespread flooding near the end of the month.

The mean temperature for December was 2.6 °C above the long-term average, making it the fifth warmest December in the series from 1910. It was the wettest December in the series by a wide margin, with 201% of average rainfall. Scotland had 68% of average sunshine, and it was exceptionally dull in the west with just 9.8 hours of sunshine at Eskdalemuir (Dumfries-shire) and 7.2 hours at Poolewe (Wester Ross).

1st to 7th:

It was mild and wet on the 1st, with rainfall totals in excess of 50 mm in the north-west Highlands. It turned very windy overnight with storm-force gusts locally, followed by a cooler day on the 2nd with sunshine and showers, wintry on high ground, and a frosty night followed for many parts. It was also fairly cool on the 3rd, with persistent heavy rain in the Borders which turned to snow in Lothian, but remaining drier in the north. The 4th was a much milder day, with heavy rain and storm-force gusts in some places, and a 78 mph gust at Inverbervie (Kincardineshire), associated with the approach of Storm Desmond. Rainfall totals between 50 and 100 mm were widespread in the west, leading to the threat of flooding. It remained windy on the 6th but it turned cooler and brighter, mostly dry in the south but with blustery showers in the north. Mild, wet and windy weather returned on the 7th, with rain both early and late in the day.

8th to 15th:

The 8th was a showery day, with a longer spell of rain in the west in the afternoon. It was cloudy, wet and very windy on the 9th, with gusts widely in excess of 60 mph, turning colder later with sleet and snow on high ground. The 10th and 11th were cool and windy with sunshine and showers, most of the showers in the west, and sleet and snow on high ground. It remained showery in the north on the 12th but rain in the south turned to snow over higher ground in the Border, Lothian and Central Lowland regions. There was a widespread frost early on the 13th with icy patches, the temperature falling to -8.7 °C at Dalwhinnie (Inverness-shire), but rain and milder conditions spread from the south, with snow over the Highlands and Grampians. The 14th had another cold start with fog in the Borders and Aviemore (Inverness-shire) recording 14 cm of snow, rain slowly dissipating with some sunshine for the Western Isles. A cold start on the 15th was followed by mild wet weather spreading from the south-west.

16th to 21st:

The 16th was cloudy and mainly dry, but with spells of rain or drizzle for the north-west Highlands and Borders, and it was windy and mild, reaching 17.2 °C at Achnagart (Highland). It was cloudy, misty, very mild and wet for most places early on the 17th, followed by showers, with a maximum of 15.3 °C at Kinloss (Moray). The 18th was cloudy and drizzly, and more general rain moved across the country from mid-morning, with a high of 16.6 °C at Achnagart. It remained cloudy, wet and windy on the 19th. Early rain over Borders and Lothian cleared on the 20th leaving a showery, windy day with sunny intervals in the east. Rain, with storm-force gusts on coasts,

cleared during the morning of the 21st to leave brighter spells, but more rain spread from the south-west overnight.

22nd to 27th:

It turned cooler on the 22nd, with rain clearing to leave widespread heavy showers and sunny spells, and storm-force gusts. Sunshine and showers, locally heavy, on the 23rd with widespread gales as Storm Eva approached, with prolonged rain in the evening. Rain cleared early on the 24th, leaving a showery and windy day with snow showers on high ground, but there was sunshine in the south. It started bright, with showers in the west, on the 25th but rain spread from the south, particularly affecting the south-east. Cool, cloudy, wet and windy on the 26th with sleet and snow on high ground. It was dry and sunny for southern and eastern areas on the 27th but cloudy with patchy light rain in the north-west, and it was cooler.

28th to 31st:

The 28th was cloudy and windy, with rain spreading from the west, and increasingly mild with temperatures exceeding 13 °C in many places. It started mostly dry, mild and bright on the 29th, with sunshine in the east, but became wet and stormy by early evening with a gust of 85 mph at South Uist (Western Isles). Storm Frank brought more heavy rain and gales into the 30th with 80 mm of rain at Tyndrum (Perthshire), and residents were evacuated due to flooding at Newton Stewart, Dumfries and Peebles. Rain spread eastwards on the 31st, with temperatures more seasonal and snow on high ground later.

Northern Ireland diary of highlights

December began mild, wet and windy with exceptional rainfall totals on the 4th and 5th. The rest of the month continued mostly unseasonably mild, wet and windy with several deep depressions, but there were some brief colder interludes, especially in the second week.

The mean temperature for December was 2.4 °C above the long-term average and it was the third warmest December in the series from 1910. With 192% of average rainfall, it was the wettest December since 1919 and the second wettest in the series. Sunshine was 82% of average, with sunshine well below normal in the west but closer to normal in the east.

1st to 5th:

It was very mild after early patchy rain on the 1st with 14.4°C reached at Killowen (County Down), and it became very windy overnight. A cooler day followed on the 2nd, with sunshine and showers during the morning, though turning drier and cloudier after midday. The 3rd was another fairly cool day, with rain throughout the day which was heaviest in the south-west. Storm Desmond brought heavy rain and strong winds to the Province on the 4th, with widespread gale-force gusts and storm-force gusts locally, reaching 68 mph at Killowen, and there was 71.4 mm of rain at Derrylin (County Fermanagh). There was further persistent heavy rain and widespread gale-force gusts throughout on the 5th, with a gust of 77 mph at Killowen, and there was a further 64.8mm of rain at Derrylin in the wake of Storm Desmond.

6th to 10th:

The weather turned more settled on the 6th, quite mild with sunny spells and some scattered showers in the north. There was early rain on the east on the 7th, and rain spread from the west later in the day, but it was otherwise a dry, cloudy, very mild and windy day. It was windy again on the 8th but cooler, with sunshine and showers early on, clearing, but cloud and persistent rain spread from the west late in the day. It started cloudy, mild, wet and windy on the 9th, and, after a dry interlude, further rain spread to all parts later. The 10th was a bright and breezy day, mostly dry at first but widespread showers developed, these merging into longer spells of rain later.

11th to 14th:

The 11th was a day of sunshine and showers, the showers wintry over high ground, cooler than recent days and remaining windy. The 12th was another fairly cool day, and early rain cleared by around midday to leave a dry afternoon, followed by a widespread overnight frost. This led into a cold start on the 13th with a minimum temperature of -3 °C in parts of County Fermanagh, but it turned milder and cloudy in the afternoon with some early-evening rain. The 14th was cloudy and mild with rain spreading from the south-west.

15th to 21st:

It was exceptionally mild on the 15th, with a minimum of 13.2 °C at Magilligan (Londonderry), but turned increasingly wet. The 16th was cloudy and mainly dry and very mild with some mist and fog patches. The 17th started and ended wet and windy, with a drier interlude in between. The 18th was also wet, but rain cleared by mid-afternoon with a maximum temperature of 15.5 °C at Magilligan. The 19th was again cloudy, mild and breezy and an organised band of showers crossed the country during the afternoon. It was showery and windy with occasional brighter spells on the 20th, staying mild. The 21st had sunshine and showers with some prolonged periods of rain, and it was mild and windy with 14.3 °C and a 59 mph gust recorded at Killowen.

22nd to 26th:

It was wet and mild early on the 22nd, followed by sunshine and showers, and it stayed windy and turned cooler. Sunshine and showers early on the 23rd, turning wet and very windy overnight with 78 mph gusts at Magilligan as Storm Eva passed to the north-west. Early prolonged rain on the 24th cleared to leave sunshine and showers with strong winds. The 25th started dry and cloudy but it turned wet with wintry precipitation on high ground. Cool, cloudy and mostly dry early and late on the 26th, but with a spell of rain around noon.

27th to 31st:

The 27th started dry, cloudy, mild and foggy for some but patchy rain spread north after dusk. The 28th again began dry, cloudy and mild but became wet and windy from late morning. It became increasingly wet and windy on the 29th with winds gusting to over 70mph by early afternoon with the onset of Storm Frank. Very wet and windy on the 30th, culminating with a December max gust of 78 mph at Magilligan and 70.2 mm of rainfall at Trassey Slievenaman (County Down). The 31st had showers and longer spells of rain, but it turned drier and cooler late in the day.

Last updated: 20 April 2016